

REPORT TO THE BOARD OF FISHERIES,
YAKUTAT SHRIMP OTTER TRAWL FISHERY



By

Tim Koeneman
and
Catherine A. Botelho

Regional Information Report1 No. 1J99-47

Alaska Department of Fish and Game
Division of Commercial Fisheries
Juneau, Alaska

January 2000

¹ The Regional Information Report Series was established in 1987 to provide an information access system for all unpublished divisional reports. These reports frequently serve diverse ad hoc informational purposes or archive basic uninterpreted data. To accommodate timely reporting of recently collected information, reports in this series undergo only limited internal review and may contain preliminary data, this information may be subsequently finalized and published in the formal literature. Consequently, these reports should not be cited without prior approval of the author or the Division of Commercial Fisheries.

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	7.2
FISHERY DEVELOPMENT AND HISTORY	7.2
REGULATION DEVELOPMENT	7.3
Fishing Seasons.....	7.3
Guideline Harvest Levels.....	7.4
Gear Restrictions.....	7.4
Closed Waters.....	7.4
1998/99 SEASON SYNOPSIS.....	7.5
1999/00 SEASON OUTLOOK	7.5

LIST OF TABLES

	<u>Page</u>
Table 7.1. Registration Area D (Yakutat) shrimp trawl harvest, number of vessels, number of landings, pounds per vessel, and pounds per landing, 1976/77 to present.	7.6
Table 7.2. Registration Area D (Yakutat) shrimp trawl harvests in thousands of pounds by month and season, 1976/77 to present.	7.7
Table 7.3. Registration Area D (Yakutat) shrimp trawl fishery harvest in thousands of pounds, by season and district, 1979/80 to present.	7.8
Table 7.4. Summary of shrimp research cruises in Yakutat Bay, Alaska.	7.9

INTRODUCTION

This report describes the commercial otter trawl fishery for shrimp in the Yakutat Area (Registration Area D) and reviews the history of the fishery and development of management regulations. The report emphasizes the otter trawl fishery; although beam trawls are also legal gear, their reported use has been insignificant. Many otter trawlers that participated in the Yakutat shrimp fishery also utilized shrimp fisheries in other registration areas. In the Yakutat Area most of the otter trawl harvest has occurred in waters of Yakutat Bay and Icy Bay. Major processors and markets have been in Kodiak, Seward, Valdez, and Astoria, Oregon.

The most significant historic harvests targeted pink shrimp *Pandalus borealis*, with smaller quantities of sidestripe shrimp *Pandalopsis dispar*, also retained. Other species incidentally captured and landed in much smaller quantities are the coonstripe shrimp *Pandalus goniurus*, humpy shrimp *P. hypsinotus*, and the spot prawn *P. platycerous*. Pink shrimp are harvested in large volumes but with a relatively low exvessel value. Significant quantities of incidentally captured sidestripe shrimp are normally retained because of their relatively high economic value. The adoption of restrictive monthly guideline harvest levels has forced industry to target the more valuable sidestripe shrimp in lower volumes during recent seasons.

Otter trawls are double-bridled and fish best on smooth, level substrate. They are dynamic trawls that rely on bridle and "otter board" arrangements to deploy, position, and maintain the opening dimensions of the net. Their design and size allows much greater fishing power than beam trawls, other vessel characteristics being equal. Otter trawl vessels are generally large and modern, with large holding or processing capacities and they have high horsepower ratings for their size.

FISHERY DEVELOPMENT AND HISTORY

The first recorded shrimp otter trawl landing from the Yakutat area occurred in 1976 (Table 7.1). During the past 23 seasons, there have only been six seasons when harvests exceeded 100,000 pounds and these all occurred between 1977 and 1987. Harvests are confidential for nine seasons when there were a limited number of boats and landings.

The highest harvest on record was in the 1980/81 season when a harvest exceeding 1,900,000 pounds was reported by 16 vessels making 23 landings (Table 7.1). Most of this volume was harvested in Yakutat Bay during the fall (Table 7.2) by larger vessels which also participated in various shrimp fisheries around Kodiak Island and further westward. Fish ticket data indicate the harvest was comprised of only pink shrimp, but undoubtedly some sidestripe shrimp were also harvested. Pink shrimp were the predominate species harvested through the 1987/88 season. No harvest was reported from the 1988/89 and 1989/90 seasons.

There was a small resurgence in the fishery from the 1990/91 through the 1993/94 seasons. Effort and harvests during this period were light, primarily due to restrictive monthly harvest levels, limitation of trawl fisheries to Icy and Yakutat Bays, closures of major portions of Yakutat Bay, and generally more conservative management. These harvests were almost evenly split between pink and sidestripe shrimp, but

the target species was sidestripe shrimp due to their higher value and the restrictive monthly harvest levels. Fishing occurred within, or immediately adjacent to, these two bays and will be limited by regulation to the bay areas in the future (Table 7.3). There were no harvests reported for the 1994/95 through 1998/99 seasons.

The department conducted stock assessment surveys in Yakutat Bay from 1980 through 1984 (Table 7.4). The fall 1980 and spring 1981 surveys were conducted in cooperation with the National Marine Fisheries Service. All subsequent surveys occurred with department vessels, equipment, and personnel. During some years, both spring and fall surveys were completed. Survey results indicated population estimates ranging from 1,840,000 to 6,460,000 pounds of all species of shrimp combined, and an average composition of 70% pink shrimp and 30% sidestripe shrimp. No surveys have been conducted since 1984. The department assumes that harvestable stocks of pink and sidestripe shrimp are present in Icy and Yakutat Bays, but the current abundance of either of these species is unknown.

REGULATION DEVELOPMENT

Initially, the entire Yakutat Area (Registration Area D, between Cape Suckling and Cape Fairweather) was open to trawling and there were no restrictions on season, harvest level, gear, or closed waters. After the intense 1980/81 season was closed by emergency order, regulations were developed in cooperation with the Yakutat Advisory Committee and brought before the board. The resulting regulations were a mixture of biological needs expressed by the department and desires by the community of Yakutat to continue to utilize the local resources through commercial, personal use, and subsistence fisheries. By the 1982/83 season, a 30,000 pounds monthly guideline harvest level, closed waters, and season opening and closing dates were implemented by regulation and emergency orders. In 1993, all waters except Icy Bay and specified areas in Yakutat Bay were closed to trawl fisheries, logbooks were made mandatory, and all participating vessels had to be registered prior to fishing. Gear regulations were liberal.

In 1997, the BOF eliminated trawl shrimp fishing in the contiguous waters of Yakutat Bay east of a line from the westernmost tip of Ocean Cape to the westernmost tip of Point Manby, including the waters of Russell and Nunatak Fjords.

Fishing Seasons

In 1981 a fishing season from June 21 through February 14, opened and closed by emergency order, was established for Yakutat Bay. The closed period was presumed to be the peak egg-hatch period, based on life history information from other fisheries around the Gulf of Alaska. The closure alleviated gear conflicts during the spring halibut openings. All other waters, including Icy Bay, remained open throughout the year. By 1993, the trawl shrimp fishery was restricted to Icy and Yakutat Bays and since 1997, the fishery has been further restricted to Icy Bay only.

Guideline Harvest Levels

Initial guideline harvest levels were estimated using average abundance per unit surface area from population estimates previously conducted on other Gulf of Alaska shrimp stocks, a preliminary survey conducted in Yakutat Bay by the National Marine Fisheries Service in 1953, and applying a fishing mortality of approximately 0.30.

During September 1980, the first population estimate using modern nets and the area swept method was conducted. Another survey was conducted during the spring of 1981 and this information was used to establish a guideline harvest level of 1.28 to 2.0 million pounds for Yakutat Bay for the 1981/82 season. In 1982, the Alaska Board of Fisheries amended the harvest level to 30,000 pounds/month to prevent taking the entire GHL early in the season. This conservative monthly harvest level was also established to provide opportunities for local Yakutat residents to enter the commercial fishery. In 1997, trawl shrimping was eliminated from Yakutat Bay.

In 1997 a trawl shrimp GHR was established for Icy Bay for a harvest between 50,000 and 350,000 pounds for the entire fishing season. Permit holders must contact the department, obtain logbooks, and attach them to the fish ticket at time of delivery.

Gear Restrictions

Legal trawl gear is still broadly defined as trawls, including beam and otter trawls, with no restriction to the maximum opening dimensions of the trawl mouths. Board members at the 1997 meeting discussed limiting the gear to beam trawl only, as they had done in Southeast Alaska. During periods specified by emergency order when the fishery targets sidestripe shrimp, there are regulations defining the minimum mesh size that may be used to reduce the bycatch of other shrimp species. Incidental shrimp species retention was limited to 10 percent, by weight of target species.

Closed Waters

A considerable portion of Yakutat Bay, including protected waters in the vicinity of Yakutat and extending to Knight Island, and Russell and Nunatak Fjords were closed to commercial trawling through early 1997. At that point, all waters of Yakutat Bay east of a line from the westernmost tip of Ocean Cape to the westernmost tip of Point Manby were closed to shrimp trawling. The commercial closure protects important subsistence fishing grounds and prevents conflict with growing commercial pot shrimp fisheries in these areas.

1998/99 SEASON SYNOPSIS

No shrimp were reported taken with trawl gear in the Yakutat Registration Area during the past season.

1999/00 SEASON OUTLOOK

There has been little interest in this fishery during the past five seasons, but the markets for shrimp in general, and specifically sidestripes, are improving and this situation could change. If the market supports the operation of a harvester-processor or a floating processor, or if land based processing interest develops in the city of Yakutat, it may be difficult to effectively manage the fishery with existing regulations and programs. If the resurgence of the fishery targets sidestripe shrimp while discarding pink shrimp, accurate accounting for bycatch will be necessary. Trawlable grounds in Yakutat Bay are utilized by other important species which include Tanner crab, king crab, halibut, and scallops.

Stock assessment surveys have not been conducted since September 1984 (Table 7.4), and the current condition of shrimp stocks is unknown. Previous survey estimates and current regulations would support a seasonal harvest of up to 270,000 pounds from Yakutat Bay. An additional 350,000 pounds could be harvested from Icy Bay. Sustained harvests at these levels would require stock assessment surveys to verify seasonal abundance and new regulations to assure adequate monitoring and reporting of both the harvest of target species and incidental bycatch. It may be necessary to incorporate bycatch criteria into the management strategy for this fishery.

Table 7.1. Registration Area D (Yakutat) shrimp trawl harvest, number of vessels, number of landings, pounds per vessel, and pounds per landing, 1976/77 to present.^a

Year/ Season	Harvest in Pounds	Number of Permits	Landings	Pounds per Permit	Pounds per Landing
1976/77	*				
1977/78	0	0	0	0	0
1978/79	0	0	0	0	0
1979/80	*				
1980/81 ^b	1,906,680	16	23	119,168	82,899
1981/82	*				
1982/83	141,714	3	7	47,238	20,245
1983/84	426,649	5	10	85,330	42,665
1984/85	*				
1985/86	*				
1986/87	*				
1987/88	40,448	3	6	13,483	6,741
1988/89	0	0	0	0	0
1989/90	0	0	0	0	0
1990/91	*				
1991/92	*				
1992/93	34,875	3	3	11,625	11,625
1993/94	*				
1994/95	0	0	0	0	0
1995/96	0	0	0	0	0
1996/97	0	0	0	0	0
1997/98	0	0	0	0	0
1998/99 ^c	0	0	0	0	0

^a Almost all landings of trawl shrimp have been made using otter trawl gear.

^b 1980/81 season includes 450,000 pounds caught by otter trawl out of Yakutat Bay during the fishery (August 1980), but not reported on fish tickets.

^c Most recent year's data should be considered preliminary.

* Where number of permits is three or less, data is considered confidential.

Table 7.2. Registration Area D (Yakutat) shrimp trawl harvests in thousands of pounds by month and season, 1976/77 to present.^a

Season	Month												Total
	May	June	July	August	September	October	November	December	January	February	March	April	
1976/77	0.0	*	0.0	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*
1977/78	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1978/79	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1979/80	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	0.0	0.0	0.0	*	*
1980/81 ^b	0.0	0.0	*	1,350.0	481.9	0.0	0.0	0.0	0.0	0.0	24.3	0.0	1,906.7
1981/82	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	*
1982/83	*	*	*	*	*	0.0	0.0	0.0	*	0.0	0.0	0.0	141.7
1983/84	0.0	0.0	0.0	0.0	*	*	0.0	0.0	0.0	0.0	*	128.0	426.6
1984/85	0.0	*	0.0	*	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*
1985/86	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	0.0	*
1986/87	0.0	0.0	0.0	0.0	0.0	0.0	*	*	0.0	*	154.7	0.0	*
1987/88	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	*	0.0	*	0.0	40.5
1988/89	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1989/90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1990/91	0.0	*	0.0	*	*	0.0	0.0	0.0	0.0	0.0	0.0	*	*
1991/92	0.0	0.0	*	*	0.0	*	0.0	0.0	0.0	0.0	0.0	0.0	*
1992/93	0.0	0.0	*	*	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.9
1993/94	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	*
1994/95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1995/96	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1996/97	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1997/98	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1998/99 ^c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0

^a Almost all landings of trawl shrimp have been made using otter trawl gear.^b 1980/81 season includes 450,000 pounds caught by otter trawl out of Yakutat Bay during the fishery (August 1980), but not reported on fish tickets.^c Most recent year's data should be considered preliminary.

* Where number of permits is three or less, data is considered confidential.

Table 7.3. Registration Area D (Yakutat) shrimp trawl fishery harvest in thousands of pounds, by season and district, 1979/80 to present.^a

District	Year										
	76/77	77/78	78/79	79/80	80/81 ^b	81/82	82/83	83/84	84/85	85/86	86/87
181	*	0.0	0.0	0.0	556.8	0.0	*	310.4	*	*	*
183	0.0	0.0	0.0	*	1,349.9	*	*	*	*	0.0	0.0
189	*	0.0	0.0	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0
191	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	*	0	0	*	1,906.7	*	141.7	426.6	*	*	*
Landings		0	0		23		7	10			
Permits		0	0		16		3	5			

District	Year											
	87/88	88/89	89/90	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99 ^c
181	40.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
183	0.0	0.0	0.0	*	*	*	*	0.0	0.0	0.0	0.0	0.0
189	0.0	0.0	0.0	*	0.0	*	0.0	0.0	0.0	0.0	0.0	0.0
191	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	40.5	0	0	*	*	34.9	*	0	0	0	0	0
Landings	6	0	0			3		0	0	0	0	0
Permits	3	0	0			3		0	0	0	0	0

^a Almost all landings of trawl shrimp have been made using otter trawl gear.

^b 1980/81 season includes 450,000 pounds caught by otter trawl out of Yakutat Bay during the fishery (August 1980), but not reported on fish tickets.

^c Most recent year's data should be considered preliminary.

* Where number of permits is three or less, data is considered confidential.

Table 7.4. Summary of shrimp research cruises in Yakutat Bay, Alaska.

Begin Date	Vessel	Cruise Number	Gear	Strata	Tows	Shrimp per nm (pounds)	Percent Pink Shrimp	Percent Sidestripe Shrimp	Area Surveyed (nm ²)	Point Estimate (pounds x 10 ⁶)	Range of Point Estimate (pounds x 10 ⁶)
3/53	John N. Cobb	COBB15	20' Beam		26	297.42 ^a			Unknown	Unknown	Unknown
9/80	Resolution	8008	32' NMFS ^b		9	680.56	91	8	50.01	6.46	4.73 to 8.19
3/81	John N. Cobb	JC81-01	32' NMFS		24	231.00	43	57	105.70	4.38	3.04 to 5.72
8/81	Pandalus		32' NMFS		22	196.27	72	27	50.01	1.86	1.13 to 2.60
9/82	Resolution		32' NMFS	2	14	141.53	47	53	50.01	1.43	1.05 to 1.64
9/82	Resolution		32' NMFS	3	5	206.00	65	35	12.89	0.50	0.30 to 2.13
9/84	Pandalus		32' NMFS	2	22	181.06	61	38	50.01	1.72	1.31 to 2.13
9/84	Pandalus		32' NMFS	3	3	230.33	93	7	12.89	0.56	0.24 to 0.89

^a Figure in pounds of pandalids per trawl hour. Species composition unknown quantitatively. Report suggest preponderance of sidestripes.

^b NMFS gear is an otter trawl.